

## CLAIMS

1. A plasma surgical device for reducing bleeding  
5 in living tissue by means of a gas plasma, comprising a  
plasma-generating system having an anode (1), a cathode  
(8) and a gas supply channel (17) for supplying gas to  
the plasma-generating system, the plasma-generating  
system comprising at least one electrode (3, 5), which  
10 is arranged between said cathode (8) and said anode (1),  
and the plasma-generating system being enclosed by a  
housing (12) of an electrically conductive material,  
which is connected to the anode (1), c h a r a c -  
t e r i s e d in that said housing (12) forms said gas  
15 supply channel (17).

2. A plasma surgical device according to claim 1,  
in which said housing (12), in addition to said gas  
supply channel (17), forms at least one additional  
channel (15, 16).

20 3. A plasma surgical device according to claim 2,  
in which said housing (12), in addition to said gas  
supply channel (17), forms at least two additional  
channels (15, 16).

4. A plasma surgical device according to claim 3,  
25 in which said gas supply channel (17) is arranged at the  
centre of the housing (12) and the additional channels  
(15, 16) are arranged along the circumference of the gas  
supply channel (17).

5. A plasma surgical device according to claim 3 or  
30 4, in which said additional channels (15, 16) are cooling  
channels for supplying and discharging a coolant.

6. A plasma surgical device according to any one of  
the preceding claims, in which the housing (12) forms a  
supply portion, in which said gas supply channel (17) is  
35 formed, and a plasma-generating portion, in which said  
plasma-generating system is provided.

7. A plasma surgical device according to any one of the preceding claims, in which said cathode (8) is connected to a conductor (11) for connection to a voltage source.

5        8. A plasma surgical device according to claim 7, in which said conductor (11) is adapted to extend through one of the channels (15, 16, 17) in said housing (12).

9. A plasma surgical device according to claim 8, in which the conductor (11) extends through a gas supply  
10 channel (17) arranged at the centre of said housing (12).

10. A plasma surgical device according to any one of the preceding claims, in which said plasma-generating system comprises at least two electrodes (3, 5), which are insulated from each other by an insulator (4).

15        11. A plasma surgical device according to any one of the preceding claims, in which said at least one electrode (3, 5) is mounted in a holding means (7) made of an electrically insulating material.

12. A plasma surgical device according to claim 11,  
20 in which said electrodes (3, 5), and an insulator (4) if any, are press fitted to said holding means (7).

13. A plasma surgical device according to claim 11 or 12, in which said cathode (8) is arranged in the holding means (7) concentrically with and spaced from an  
25 electrode (5) closest to the cathode (8).

14. A plasma surgical device according to claim 13, in which said cathode (8) is mounted in the holding means (7) by means of a cathode holder (9), which is press fitted to the holding means (7).

30        15. A plasma surgical device according to claim 13 or 14, in which an insulating tube (6) of a ceramic material is mounted on the inside of the holding means (7) so as to enclose the cathode (8).

35        16. A plasma surgical device according to any one of claims 13-15, in which the holding means (7) has a connection end, which is connected to said gas supply channel (17), so that gas is passed through the holding

means (7) to the cathode (8) and then through said at least one electrode (3, 5) towards the anode (1).

17. A plasma surgical device according to claim 16, in which the holding means (7) has an outer shape such as to allow a fluid to flow respectively from and to the additional channels (15, 16) in a space formed between the holding means (7) with said electrode (5, 3), and insulators (4) if any, and the inner wall of the housing (12) at the holding means (7).

18. A plasma surgical device according to any one of the preceding claims, in which a gasket (2) is arranged between the anode (1) and the electrode (3) closest to the anode (1), and the plasma-generating system is arranged in such manner in the housing (12) that the anode (1) is connected to the housing (12), a predetermined compressive force being applied to the gasket (2), so that a watertight seal is established between the housing (12) and the anode (1) and electrical contact therebetween is ensured.

19. A plasma surgical device according to any one of the preceding claims, in which said housing (12) is surrounded by a first contact ring (27) in electrical contact therewith, which contact ring is connected to earth.

20. A plasma surgical device according to claim 19, in which said housing (12) is surrounded by a second contact ring (24), which is capable of being used to constantly control the earthing of the housing (12).

21. A plasma surgical device according to any one of claims 2-19, in which a connecting device is provided for connecting the gas supply to said gas supply channel (17) and any desired function to said additional channels (15, 16).

22. A plasma surgical device according to claim 21, in which said connecting device has an outlet end, which defines connecting channels for obtaining a fluidtight fit in said gas supply channel (17) and additional

channels (15, 16), and an inlet end provided with hose couplings (18, 19, 20) for connecting hoses to each of said connecting channels.

23. A plasma surgical device according to claim 21  
5 or 22, in which said connecting device also has a conductor opening through which a cathode conductor (11) extends for connection to a voltage source.

24. A plasma surgical device according to any one  
10 of claims 2-23, in which said housing (12) is connected to hoses for supplying gas and any desired function to the additional channels, which hoses are connected, at their other end, to a connector for connection to a supply unit.

25. A plasma surgical device according to any one  
15 of the preceding claims, which comprises a handle portion that at least partially encloses said housing (12) to allow easy handling of the device.

26. A plasma surgical device according to claim 20,  
20 which comprises a circuit adapted to distinguish the device type by means of the resistance of an indication component (25).

27. A plasma surgical device according to any one  
of the preceding claims, which has a first button (26) for switching the plasma generator on and off.

25 28. A plasma surgical device according to claim 27, which, for increased reliability, has a second button (26).